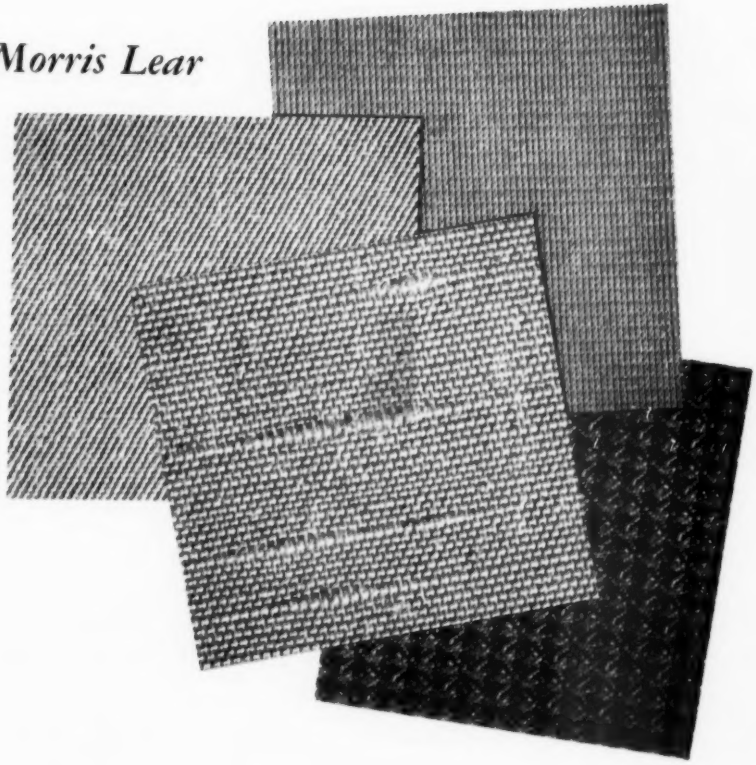
CORNELL EXTENSION BULLETIN 876

# When you work with *RAYON and ACETATE*

*Anita Morris Lear*



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# *When You Work with Rayon and Acetate*

By

ANITA MORRIS LEAR

ACETATE and rayon fabrics are on the market in a bewildering variety of weights, weaves, mixtures, and finishes. Whether you plan to buy or to make a garment of these man-made materials, you will need to know how to handle them and how they react under various conditions. All acetate and rayon fabrics do not behave alike; and in many cases they react differently from fabrics made of natural fibers such as cotton, wool, and silk.

This bulletin is designed primarily to help those who wish to construct acetate or rayon garments. However, most of the principles discussed can also be used to good advantage by persons who purchase their clothes ready-made and who want to know how to buy wisely and how to take care of their clothes so they will wear well.

### *What Rayon and Acetate Are*

A few facts may give you a better understanding of rayon and acetate. Both are man-made fibers. Both are made from cellulose, which comes from wood pulp and cotton linters. The cellulose is changed from solid to liquid form and the liquid is solidified again, but this time in the form of filaments: that is, long strands of fiber.

*Rayon* is made by two processes—the viscose process and the cuprammonium process. *Acetate* is made by the cellulose acetate process. These technical terms, which you will see if you read about rayon and acetate, are the names for three manufacturing processes. They differ in the chemicals used and the number of stages needed to get from cellulose to the finished fiber.

The filaments or strands of fiber are made into filament yarns and spun yarns.

### *How Filament and Spun Yarns Differ*

*Filament yarns* are produced by twisting smooth, uniform filaments—long strands of fiber—into a continuous yarn.

*Spun yarns* are made by cutting long filaments into short-length fibers and then spinning them into yarn.

These methods make possible a greater variety of fabrics. From filament yarns are made such fabrics as taffeta, crepe, and jersey; from spun yarns come fabrics that resemble linen, cotton, and wool.

### *How These Fabrics Are Constructed*

Many types of fabrics are made of rayon or acetate fibers. Some fabrics are made of rayon combined with acetate. Others are made from rayon or acetate combined with fibers such as cotton, nylon, or wool.

The two basic methods used to make yarns into fabrics are weaving and knitting.

*Weaving* is the interlacing of lengthwise and crosswise yarns to make a fabric. The basic weaves are: *Plain weave* (figure 1), *twill weave* (figure 2), and *satin weave* (figure 3).

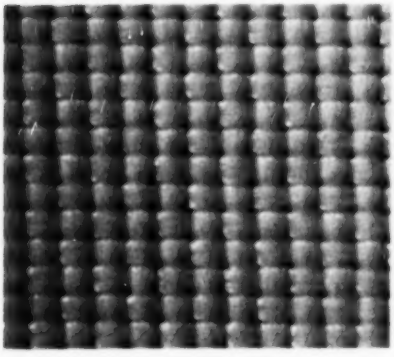
*Knitting* is the forming of yarn into rows of loops and looping each row firmly within the succeeding row to make a fabric (figure 4).

### *How to Tell Acetate from Rayon*

The Federal Trade Commission rulings have made it compulsory to label acetate fabrics as acetate, rayon fabrics as rayon. In blends, the fibers must be listed on the label in the order of their predominance in weight. So, be sure to read the label when you buy these fabrics.

Simple tests you can make at home to find if acetate fibers are in your fabric are the burning test and the ace-

*Figure 1. A plain weave fabric, characterized by a simple over and under interlacing of yarns.*



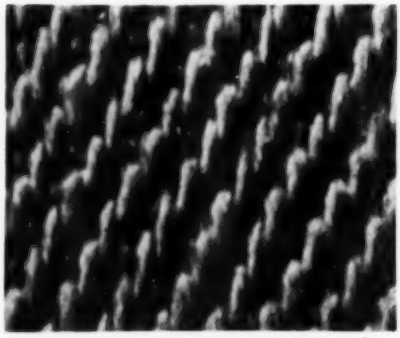


*Figure 2. A twill weave fabric, characterized by diagonal wales (or ribs).*

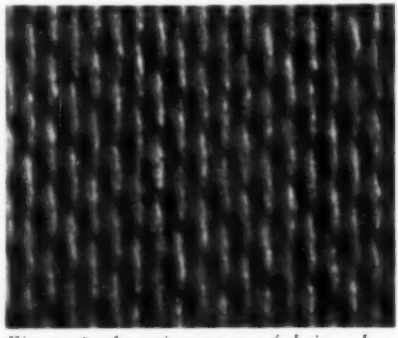


*Figure 3. A satin weave fabric, characterized by long exposed lengthwise (warp) threads.*

*Figure 4. A knitted fabric, characterized by rows of loops, looped firmly together.*

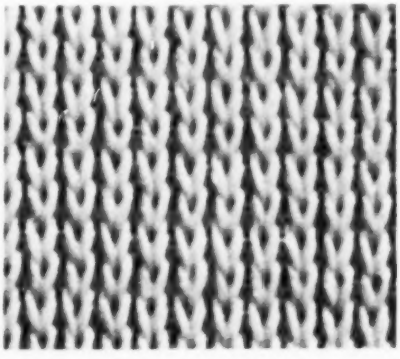


*Figure 5. Burning leaves no bead and little ash on rayon yarn (left) and rayon fabric (right).*

tone test. For the first test, burn a small piece of fabric or yarn pulled from the edge of the material. Rayon burns rapidly, leaving no bead and little ash (figure 5). Acetate burns more slowly than rayon, leaving a hard bead on yarn and a puckered and curled edge on fabric (figure 6). If the fabric contains more than one kind of fiber or has a special finish, however, the test may not be accurate.

For the other test, apply a few drops of acetone to the fabric. You may buy acetone at a drugstore. To see what happens, look at figure 7. A few drops of acetone on this acetate fabric dissolved the acetate and left the hole you see. When the acetone evaporated, the dissolved fibers hardened and left a hard edge around the hole.

*Figure 7. A drop of acetone on this fabric dissolved the acetate fibers and left a hole.*

*Figure 6. Burning leaves a hard bead on acetate yarn (left) and a puckered, hard, curled edge on acetate fabric (right).*

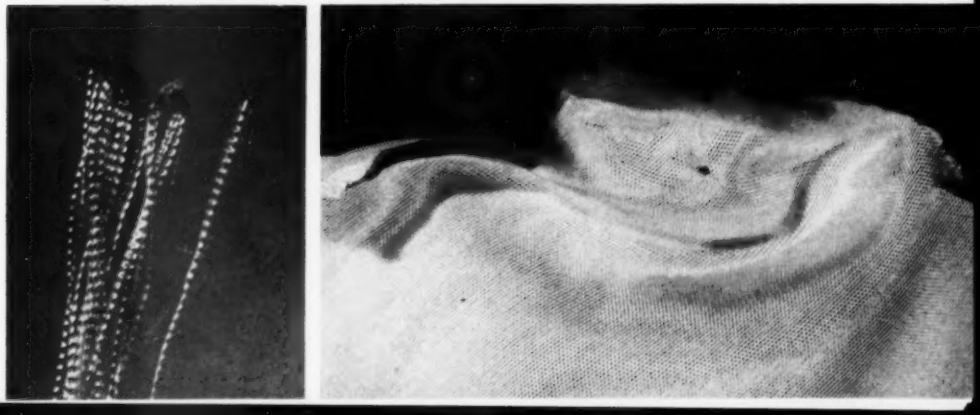


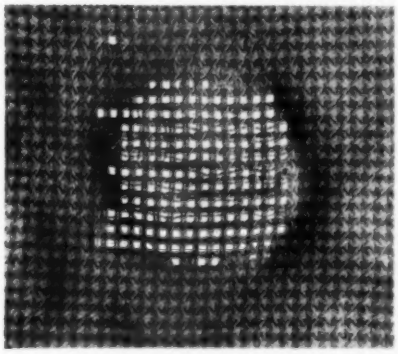
**Table 1. Behavior Differences between Rayon and Acetate Fabrics**

| Reaction | Rayon | Acetate |
|---|---|---|
| Bleaching | Can be treated with mild bleach if fabric is white. (Rinse thoroughly after bleaching to avoid brown stains in ironing and weakening of fabric.) | Is weakened by household bleach. (Rinse thoroughly after bleaching to avoid brown stains in ironing and weakening of fabric.) |
| Pleating | Does not hold a pressed pleat or crease as well as acetate | Holds a pressed pleat and creases better than rayon |
| Deodorants and non-perspirants | Is more readily affected by some than acetate | Is affected by direct contact with some |
| Drying | Dries slowly | Dries faster than rayon |
| Dyeing | Will take household dye | Will take some household dyes. (Read the label on the dye.) |
| Gas or fume fading | Is not affected | May be affected when certain dyes and finishes are used. Colors containing blue are affected |
| Ironing | Scorches at very high temperature; can stand hotter iron than acetate | Fuses or melts in contact with hot iron; some will glaze or shine at moderate temperatures |
| Laundering strength | Is weak when wet; stronger than acetate when dry | Is weak when wet |
| Shrinkage | Shrinks according to construction and finish | Shrinks according to construction and finish |
| Mildew and rot | Is weakened or destroyed | Is highly resistant |
| Moisture | Absorbs moisture more readily than acetate | Does not absorb water readily |
| Staining and soiling | Stains more deeply than acetate as fabric is more absorbent | Stains less deeply than rayon; spots easier to remove, as fabric is less absorbent than rayon |

Acetone will not dissolve rayon, however. When acetone is put on a fabric containing both rayon and acetate, the acetate will dissolve and leave the rayon yarns (figure 8).

You will need to know which fibers

*Figure 8. This fabric is made of rayon and acetate. A drop of acetone dissolved the acetate yarns, but did not harm the rayon yarns.*



are present in a fabric to know how to handle it in construction and how to take care of a garment. A fabric containing both rayon and acetate requires the care given acetate fabrics.

Table 1, page 6, gives some of the differences to be considered in handling and caring for rayon and acetate fabrics.

Fabrics vary in weight, texture and appearance; each has its distinguishing characteristics. To guide you in choosing the best fabric for your purpose, some commonly used fabrics that contain rayon and acetate fibers are described in Table 2.

**Table 2. Characteristics of Some Rayon and Acetate Fabrics**

| Fabric | Characteristics | Some Uses |
|---|---|---|
| Bengaline | Plain weave; rib slightly heavier than in faille; should usually be dry cleaned | Suitable for suits and afternoon and evening dresses |
| Broadcloth | Plain weave; lightweight, firm, closely woven; shrinkage may be high, but laundering is easy | Suitable for blouses and sportswear |
| Crepe-back satin | Satin weave; soft draping qualities; should be dry cleaned | Suitable for dresses and formal wear |
| Faille | Plain weave; flat-ribbed, has firmness and body; should usually be dry cleaned | Lightweight faille is suitable for blouses or dresses; heavier weight is suitable for suits |
| Flannel | Plain or twill weave with soft surface; some lightweight are washable; heavier weight and some lightweight should be dry cleaned | Lightweight flannel is suitable for dresses, blouses, and sportswear; heavier weight is suitable for suits |
| Flat crepe | Plain weave; smoothest of all crepes; has good draping qualities; not always washable; may shrink | Suitable for blouses, dresses, and lingerie |

**Table 2 (Continued)**

| Fabric | Characteristics | Some Uses |
|---|---|---|
| Gabardine | Twill weave; firm, durable; good tailoring qualities. Some have finishes to control shrinkage; some may be washable | Lightweight gabardine is suitable for dresses; heavier weight is suitable for suits and raincoats |
| Jersey | Knit fabric; soft; good draping qualities; sometimes washable | Lightweight jersey is suitable for lingerie; heavier weight is suitable for blouses and dresses |
| Linen-textured | Plain weave; varies in weight; usually washable; may shrink | Weight varies from sheer, suitable for handkerchiefs, to heavier linen-textured fabrics suitable for dresses, suits, and sportswear |
| Mossy crepe | Plain weave with surface interest—a moss or pebbled effect; good draping qualities; not washable—should be dry cleaned | Suitable for dresses |
| Novelty spun | Plain weave with surface interest; varies in softness and firmness; durable; may be washable | Lightweight novelty spun is suitable for dresses and sportswear; heavier weight is suitable for suits |
| Shantung | Plain weave; uneven "slub" yarns in crosswise threads only; durable; usually washable | Suitable for blouses, dresses, and sportswear |
| Sharkskin | Plain or twill weave or a combination of plain and twill; firm, semi-crisp; good tailoring qualities; usually washable | Suitable for tailored blouses, dresses, and sportswear |
| Sheer crepe | Plain weave; lightweight, tightly woven; good draping qualities; not always washable because of shrinkage | Suitable for blouses and dresses |
| Slipper satin | Satin weave; heavy satin should be dry cleaned | Heavy satin with stiff finish is suitable for formal evening or bridal wear |
| Taffeta | Plain weave; smooth, crisp, firm with a sheen; should be dry cleaned | Suitable for afternoon and evening dresses |

### *How to Select Suitable Fabrics*

In selecting fabrics or ready-made garments of rayon and acetate, read the labels and tags. Look for information about colorfastness and recommended methods for cleaning and care. Find out whether the fabric can be laundered or whether it should be dry cleaned. The washability of the fabric depends on its construction and finish. Smooth-surface fabrics with little or no crepe will wash. Very crepey fabrics will shrink or stretch in washing and should be dry cleaned.

If you would like a washable dress, be sure that the trimming, as well as the fabric, is washable; and choose a simple style. Drapery and thickness may make it difficult to iron rayon or acetate fabrics. Firm, closely-woven fabrics usually wear best. These fabrics tend to shrink less and keep their shape better than do loosely woven fabrics.

Choose a fabric that is becoming to you and suitable for the design of the pattern you plan to use. *For tailored details* choose a firm fabric; *for pleats*, a fabric that has body and enough crispness to hold a crease; *for soft details such as shirring or tucks*, a soft fabric; and *for draped effects*, a pliable fabric that will fall into soft folds when held up by a corner.

Choose simple pattern designs for printed fabrics and fabrics with a great deal of surface interest. Let the design of the pattern or the design of the fabric be emphasized, not both.

Broadcloth, linen-textured fabric, and shantung are among the rayon and acetate fabrics that are easiest for beginners to use.

Until you have developed skill in handling rayon and acetate, you would do well to look for fabrics with these qualities:

Firm weave, not much lengthwise stretch, and little tendency to fray

Medium weight. These offer fewer problems than sheers or heavy fabrics

No nap. In cutting a garment from napped fabric, all nap must run in the same direction, which takes careful planning. Also the nap may push out of place when stitched

Texture or surface interest. Stitching is less noticeable

Plain, all-over medium or small prints; no up-and-down design. Large prints, plaids, stripes, and checks have to be matched in cutting and sewing

### *How to Prepare the Fabric for Sewing*

The preparation of your fabric before you cut it is of the utmost importance to the success of your garment. Here are some rules to follow:

Straighten cut edge: Straighten cut edges of woven fabrics by pulling a thread. For knitted fabrics such as jersey, mark the grain with chalk or thread at cut edges.

Preshrink: Look for labels and tags that give information as to expected shrinkage. Tests have shown that many rayon and acetate fabrics shrink.

Warp yarns (lengthwise yarns)

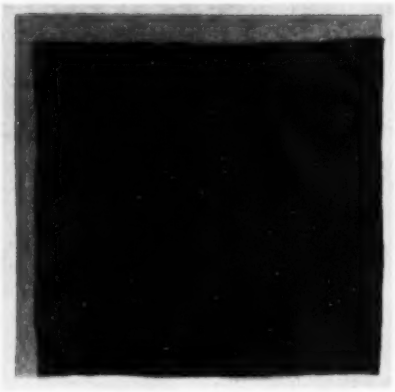


*Figure 9. This dress-weight fabric was washed in lukewarm water and mild soap. The fabric shrank in width 4.5 per cent and in length 6.2 per cent (2¼ inches per yard).*

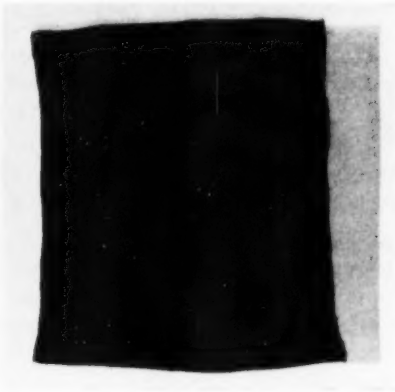


*Figure 10. This crepe with a pebble surface was washed with lukewarm water and mild soap. The fabric stretched irregularly in width and shrank in length 12.5 per cent (4½ inches per yard).*

generally shrink more than filling yarns (crosswise yarns). This warp shrinkage of untreated rayon and acetate fabrics may range from 1 inch to 8 inches per yard. This should be considered and additional yardage purchased for preshrinking.

It is wise to preshrink rayon and acetate fabrics if you want a washable garment (figure 9). Some rayon and acetate fabrics made of crepe yarns shrink so much that they should not be laundered (figure 10). Some manufacturers guarantee their fabrics unconditionally washable. This means the fabric can be laundered under any condition.

It is advisable to shrink suitings of acetate and rayon fabric before making a suit. This helps to get smoothness in pressing and to prevent additional shrinking in steaming or cleaning. Shrinking may be done by a reliable tailor or it can be done at home as described below.

*To preshrink acetate and rayon suitings at home* unfold the fabric and clip the selvage every 2 inches. The clipping will help make the material lie smooth and flat, since selvages shrink differently from the body of the fabric. Dip a bed sheet in warm water; wring it out. Lay the fabric in a single layer smoothly on the sheet. Fold the sheet and fabric together lengthwise in approximately 12-inch folds. Be careful not to roll any wrinkles into the fabric. Leave 4 or 5 hours or longer, depending upon the thickness of the fabric. Then unfold and shake out any wrinkles. Press on the wrong side with a press cloth, following the

grain and being careful not to stretch the fabric. Hang it over a smooth rod and let it dry thoroughly before cutting. Figure 11 shows a fabric that has been preshrunk by this method.

*To preshrink sheer and medium-weight rayon and acetate fabrics for washable garments,* put the fabric in lukewarm water until all of it is thoroughly wet. Don't let it soak for a long period as some colors may run. Squeeze out the water and absorb some moisture by rolling the fabric in a Turkish towel. Then hang the material over a rod, being sure the edges are together and the grain straight. When almost dry (not completely) press on the wrong side, following the grain (figure 12).

Fold and pin: Continue your preparation by folding the right sides of the fabric together with selvage edges even. Pin the fabric on each edge to hold it firmly. Be sure that the selvage edges and crosswise threads are together and that the cloth is smooth.

Use fine dressmaker pins with sharp points so as not to mark or tear the fabric. Use plenty of pins. On cloth that slips, put pins around edges, grainlines, darts, tucks, and pleats (figure 13, page 12). The pins help in transferring markings accurately from the pattern to the fabric.

Some rayon or acetate fabrics may slip or pull in cutting. Be careful to keep the fabric flat on the cutting table. Weights will help hold it in place.

*Figure 11. This suiting made of combined rayon and acetate fibers was preshrunk by the recommended home method. The fabric shrank in width 1.5 per cent and in length 3.1 per cent (1 1/10 inches per yard).*

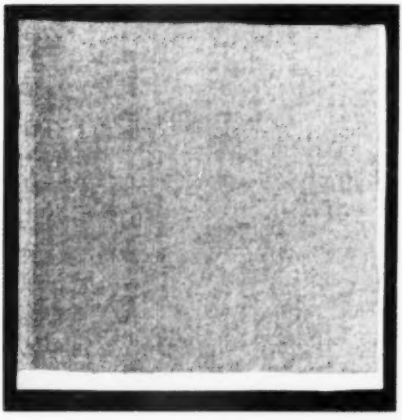


*Figure 12. When this washable dress-weight fabric was preshrunk, it shrank in width 2.7 per cent and in length 5.5 per cent (2 inches per yard).*

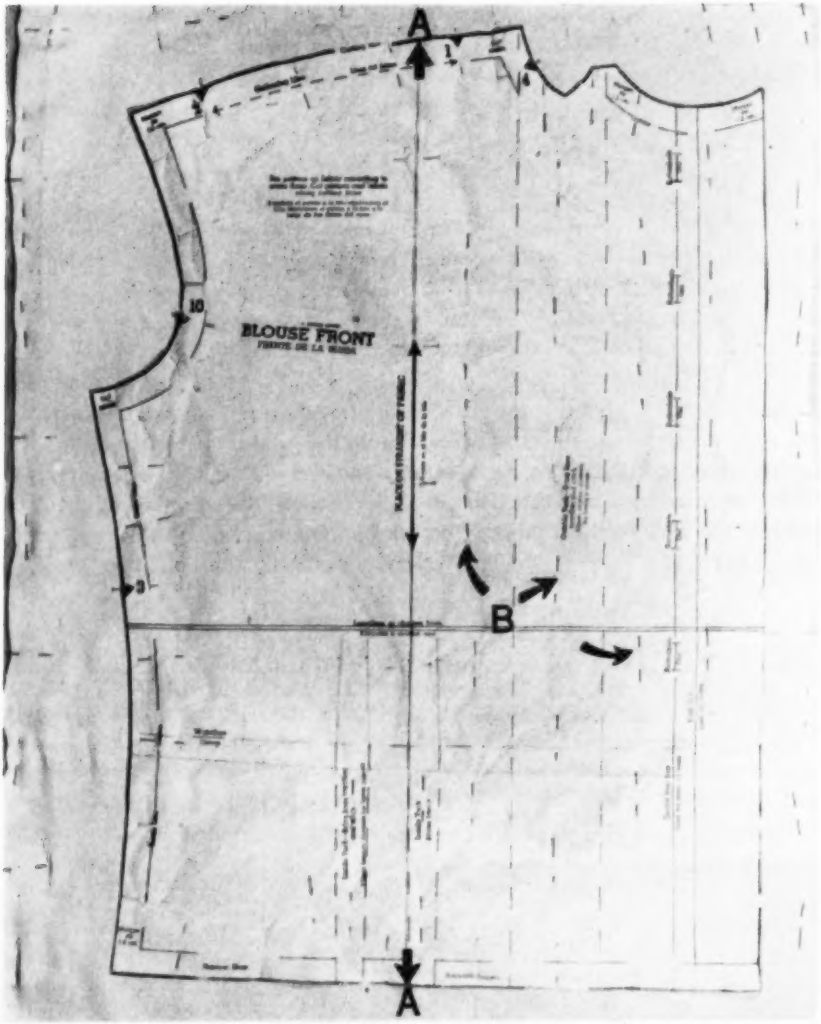



*Figure 13. The right side of this fabric is folded with edges together. The selvage and crosswise cut ends are pinned together. To prevent slipping and stretching the fabric is pinned to wrapping paper. The pins are placed close together around edges of pattern, on grainline (A), and tucks (B).*

If the fabric slides around too much on a smooth table, spread a blanket or sheet, or oilcloth with the wrong side up, over the table, and put the fabric on top. For fabrics that slip and stretch in cutting, pin the fabric to medium-weight paper. Then cut through both fabric and paper. If you use press markings, it will be easier to do the marking before the paper is removed.

***How to Cut the Fabric***

Here are some suggestions to help you cut your fabric accurately. Use sharp shears. Cut with the grain—the direction you will stitch; in the skirt, cut from the bottom up toward the top.

Cut "notches" out—not indented, as on the pattern. If you do this, you will avoid the risk of cutting too deeply on fabric that might fray.

If there is danger of raveling, plan for an extra seam allowance so you will have enough width for a seam finish.

***How to Mark the Fabric***

Here are several ways of marking your fabric:

*Tracing wheel and dressmaker carbon.* Better try it on a sample first. Wax may stain some rayon and acetate fabrics. Remove only enough pins to make space for sliding dressmaker carbon under. Put pins back in place after marking until all markings have been transferred.

*Thread marking.* For tailor's tacks or tailor's basting, mark with soft white darning thread before removing pins.

*Press marking.* This is a good way to indicate straight lines on firmly woven rayon or acetate fabrics. Use a warm iron.

*Tailor's chalk.* Pressed clay chalk may be used safely, but waxed chalk may leave oily stains on some rayon or acetate fabrics. Test chalk on a scrap of fabric before using.

***How to Sew the Fabric***

Your equipment, as well as your techniques, is important.

Mercerized sewing thread is generally satisfactory for hand and machine sewing. Silk thread blends in better with the texture of satins, velvets, and shiny fabrics.

Fine machine needles and hand needles are preferred for good workmanship. Dull needles or pins may catch fine threads and pucker the fabric; coarse needles and pins leave holes.

Here are some techniques which will make it easier for you to sew on rayon and acetate fabrics.

*Stay-stitching.* Machine-stitch the cut edges to prevent fraying. Before the garment is assembled, stitch 1/16 inch from seam marking into seam allowance around bias or curved edges, such as neck and armhole, to keep the fabric from stretching.

*Pinning and basting.* Even simple-looking seams need to be pinned first and then basted to prevent slippage and to give accuracy.

*Machine stitching.* Adjust the length of the machine stitch and the tension to suit the individual fabric. Try the stitch and tension on a sample of cloth first.

When stitching jersey, stretch the fabric a little and loosen the machine tension so that the seams will be elastic.

For sheer fabrics, jersey, and velvet, it is wise to stitch over strips of smooth tissue paper to give a firmer base and prevent slipping.

You can help to keep the rayon fabric from slipping if you fasten a lightweight Turkish towel securely over the end of the sewing machine.

***How to Press the Fabric***

Before you do any pressing, test the heat of your iron on a scrap of fabric or on a seam or facing of a ready-made garment. The correct amount of heat will vary according to the kind of fiber and the construction of the cloth; and you will have to be the judge. Remember, acetate will become shiny and may even melt under high heat (figure 14). Rayon can stand a hotter iron than acetate but scorches at very high temperatures.

Watch carefully that you keep the lengthwise and crosswise threads of the cloth straight while pressing.

Whenever possible, steam-press lightly on the wrong side. Use press cloths of the best weight for the fabric and the purpose.

*For blouse and dress-weight fabric,* place a piece of dry cotton cloth or

*Figure 14. An iron set at a high temperature was placed on this acetate fabric. The fiber glazed, melted, puckered, and a hard edge formed.*

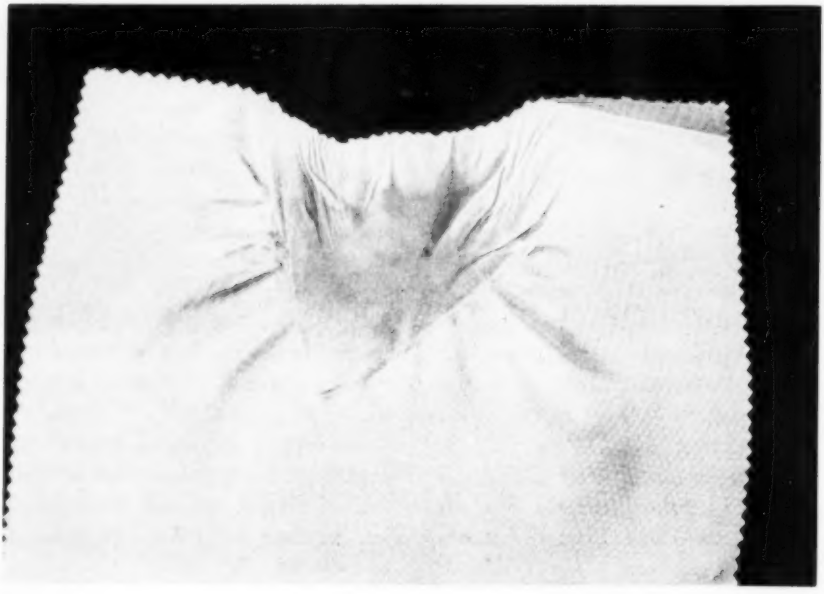


**Table 3. Suggestions for Pressing Rayon and Acetate**

| Fabric | Press cloth | Iron |
|---|---|---|
| Washable crepes | Almost dry | Moderately hot |
| Spun fabrics: | | |
| Heavy | Damp | Moderately hot |
| Dress-weight | Dry or almost dry | Moderately hot |
| Sheer | Almost dry | Moderately hot |
| Sharkskin | Damp | Warm |
| Jersey | Damp | Warm |
| Washable satin: | | |
| Heavy, dress-weight | Damp | Warm to moderately hot |
| Lightweight, lingerie | Almost dry | Moderately hot |
| Suitings (heavy) | Damp (let steam-dry) | Moderately hot |

tissue paper next to the fabric and spread a layer of damp, firm cheesecloth over this. Use a moderately warm iron and lightly steam the fabric.

*For suiting-weight fabrics,* place a wool press cloth next to the fabric and spread a layer or more of the damp cheesecloth over this; use a moderately hot iron and let the fabric steam-dry. (The above methods will differ with the type and weight of fabric.)

Refer to Table 3 for general suggestions for pressing, but *be sure to test on a sample first.*

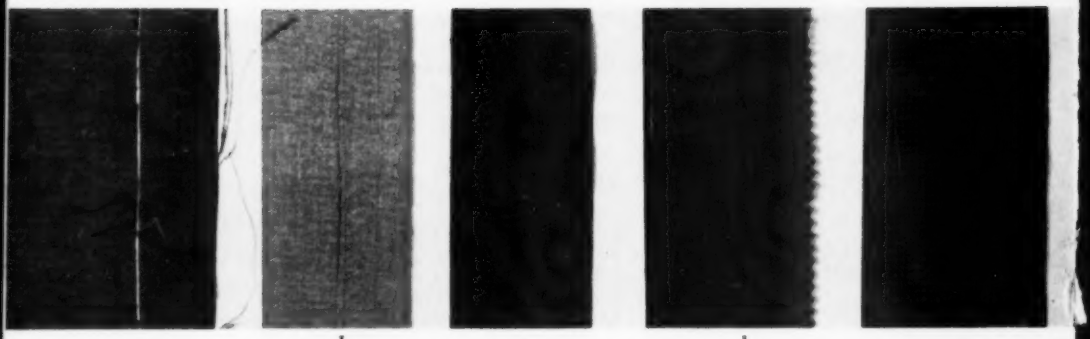
### *Some Garment Finishes Used on Rayon and Acetate Fabrics*

*Interfacings.* Some acetate and rayon fabrics need interfacings to give them extra body, to prevent the fabric from stretching, and/or to carry out an effect in a chosen design. Interfacing is often of the same weight or lighter weight than the outer fabric, depending upon the body needed. All interfacing fabrics should be shrunk before being used.

For the front facings, cuffs, and belts of blouses and dresses, you may use lightweight but firm interfacing fabrics such as lawn, lightweight muslin, taffeta, and dress-weight tailor's canvas.

For rayon and acetate suits, tailor's canvas is suitable for interfacing in the collar and front facings. Wigan or muslin is the best interfacing for the bottom of the sleeves and the bottom of the jacket. These materials may also be used in the collar and front facings.

Tailor's canvas varies in stiffness and in weight. It is a fabric made of cotton or linen. Some tailor's canvas contains goat or horse hair ("haircloth" or "hair canvas"). Wigan is a lightweight cotton fabric that is canvas-like.



*a* *b* *c* *d* *e*

*Figure 15. (a) This fabric ravels badly; (b) This cut edge is stay-stitched to prevent fraying; (c) edge-stitched finish; (d) machine-stitched and pinked finish; (e) and bound seam finish.*

*Seam finishes.* The type of seam finish depends upon the weave and the weight of the cloth as well as on the amount the cloth will fray. Some fabrics ravel badly (figure 15a). The cut edge may be stitched to prevent fraying in handling (figure 15b). Seams that are to be pressed open may be edge-stitched (figure 15c), machine-stitched and pinked (figure 15d), overcast or bound (figure 15e). Bound or edge-stitched seams may be used in unlined rayon suits, depending upon the weight of the fabric used. In some sheer fabrics a French seam or seams double-stitched together and trimmed are popular.

*Hem finishes.* Choose the hem finish according to the weight and texture of of the cloth and the type of skirt. The finished hem should give a flat and smooth appearance on the right side of the garment. In a full or circular skirt, a narrow hem usually hangs better and is flatter than a wide one. Some dress-weight rayon or acetate fabrics look best when the hem is edge-stitched and sewed to the garment by hand. Seam tape is stitched to the raw edge of the hem and sewed to the garment by hand on skirts and unlined jackets of suit-weight fabrics, and some dress-weight rayon or acetate fabrics. You must shrink the seam tape before using it. On some very sheer fabrics, a rolled hem is preferred.

*Buttonholes.* Nicely made fabric buttonholes give a professional look to the garment. However, on a very sheer material, or on one that frays badly, worked buttonholes may be more satisfactory. It is best to make a sample buttonhole on a scrap of your fabric before attempting buttonholes on the garment.

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